



Gas phase synthesis of methylene lactones using oxynitride catalyst

Description of Technology: The invention pertains to a method of producing unsubstituted and substituted alpha-methylene lactones by a gas phase reaction of starting lactones with formaldehyde in the presence of an oxynitride catalyst or oxynitride composite catalyst.

Patent Listing:

1. **US Patent No. 7,151,185**, Issued December 19, 2006, "Gas phase synthesis of methylene lactones using oxynitride catalyst"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnethtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7151185>

Market Potential: Alpha-methylene-gamma-butyrolactone and methyl alpha-methylene-gamma-butyrolactone are useful monomers in the preparation of both homopolymers and copolymers. In addition, the alpha-methylene-gamma-butyrolactone group is an important structural feature of many sesquiterpenes of biological importance.

Although a phosphorus oxynitride system might be expected to possess a significant advantage in hydrothermal stability compared to conventional silica catalysts, the catalytic activity of such a material for lactone conversion reactions cannot be predicted because of the unpredictable nature of catalysis in general.

It would be advantageous to have a catalyst that is hydrothermally stable at high temperatures and whose activity does not decay with time on stream (TOS) or after several high temperature oxidizing regenerations.

Benefits:

- Utilizes a catalyst that is hydrothermally stable
- Activity does not decay with time on stream

Applications:

- Production of lactones

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